ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Wednesday, September 29, 2010 4:42 PM
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Subject: U.S. EPR Design Certification Application RAI No. 441 (4970), FSAR Ch. 4, NEW PHASE 4 RAI
Attachments: RAI_441_SRSB_4970.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 1, 2010, and discussed with your staff on September 21, 2010. Drat RAI Question 04.04-62 was modified as a result of that discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,
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Hearing Identifier: AREVA_EPR_DC_RAIs
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Request for Additional Information No. 441(4970), Revision 1

9/29/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 04.04 - Thermal and Hydraulic Design
Application Section: 4.4.6.3

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

04.04-62

OPEN ITEM

NEW PHASE 4 RAI

EX-CORE DETECTOR FIGURES

Provide a description, complete with figures, for the following information in relation to ex-core detectors:

1. Ex-core detector location (radial)
2. Ex-core detector location (axial)
3. Measuring ranges of ex-core instrumentation
4. Division of measuring ranges for ex-core instrumentation

04.04-63

OPEN ITEM

NEW PHASE 4 RAI

BASES FOR 2 COUNTS PER SECOND (CPS) Source Range Detector (SRD) OPERABILITY GUIDELINE

Provide the basis for the 2 cps SRD operability guideline. Specifically, address the applicability of the 2 cps value to a neutron detector (e.g. CPNB-64) with 2.5 times the sensitivity of the detectors in the operating fleet (e.g. CPNB-44).

04.04-64

OPEN ITEM

NEW PHASE 4 RAI

First Cycle Source Range Detector Response

US EPR source range detector (SRD) response during the first cycle operation is required to have at least 2 CPS with the presence of fresh fuel and neutron sources. The SRD responses are affected by the detector design, neutron source design and the final detailed engineering determination of detector installation position and concrete thickness between SRD and core. Provide detailed design requirements for SRD detector design, neutron source and location, and, the concrete structure design and SRD location. Justify that these requirements will allow the final SRD installed to satisfy the 2 counts/sec requirements.

04.04-65

OPEN ITEM

NEW PHASE 4 RAI

EXCORE DETCTOR MODELS

For the limiting EPR event in terms of calories per gram deposition, perform a sensitivity analysis of the impact of errors in the adjoint weighting coefficients for the ex-core detector model.

1. Provide the weighting coefficients used for EPR NEMO-K calculations.
2. Define a bounding maximum error expected in the weighting coefficients based on cycle dependent changes by examining the weighting coefficients for different plants with and without heavy reflector.
3. Modify the weighting factors by a bounding amount and estimate the impact on the transient response.

04.04-66

OPEN ITEM

NEW PHASE 4 RAI

CONFIRMATORY CALCULATION INPUT

As part of the review effort, NRC staff plans to examine AREVA's Monte-Carlo calculation of neutron flux at ex-core detector location. Provide the finalized Monte-Carlo input deck and relevant supporting documents so that staff can perform an independent confirmatory calculation.